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(54) Title  
COMPOSITE GLASS PANEL

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(56) Prior Art Documents  
US 2302760  
US 4581868  
AU 570499

(57) Claim

1. A facade panel in the form of a composite glass panel including a glass sheet on the wall side as well as a glass sheet on the outer visible side which are joined together by means of a layer of synthetic plastics material, and a fastening device, wherein the glass sheet on the wall side has at least two holes drilled through it which are provided with undercutting and wherein a metal fastening element is positively anchored into the drilled holes with the aid of a bushing in each case.

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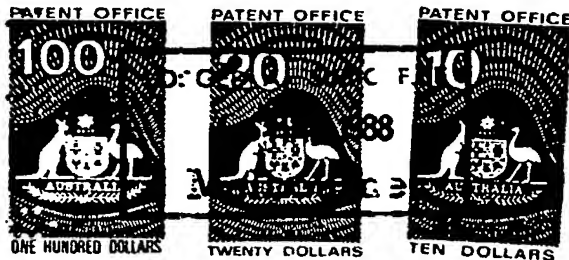
APPLICATION ACCEPTED AND AMENDMENTS  
ALLOWED 22-11-89

APPLICATION FOR A PATENT

We, FLACHGLAS AKTIENGESELLSCHAFT, of Otto-Seeling-Promenade 10-14, D-8510 Furth,  
Federal Republic of Germany, hereby apply for the grant of a Patent for an invention  
entitled "FACADE PANEL IN THE FORM OF A COMPOSITE GLASS PANEL" which is described in  
the accompanying complete specification.

Our address for service is care of CALLINANS, Patent Attorneys, of 48 Bridge Road,  
Richmond, 3121, Victoria, Australia.

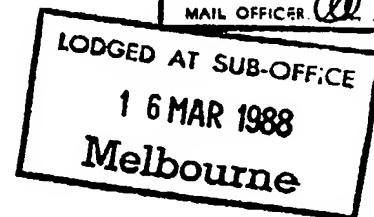
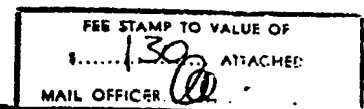
D A T E D this 16th day of March, 1988.



FLACHGLAS AKTIENGESELLSCHAFT

By its Patent Attorneys:

CALLINANS



To: The Commissioner of Patents.

(a) Delete for Non-Convention Application.

(b) Delete for Convention Application.

(a) ~~A Convention Application~~  
(b) An Application  
for a Patent ~~or Patent of Addition~~

In support of the Application/~~Convention Application~~ made by

(c) Insert Full Name of Applicant.

(c) FLACHGLAS AKTIENGESELLSCHAFT, hereinafter termed  
"the said Company"  
for a patent/~~patent of addition~~ for an invention entitled:

(d) Insert Title of Invention.

(d) "FACADE PANEL IN THE FORM OF A COMPOSITE GLASS PLATE"

(e) Insert Full Names of Declarant(s).

~~I/We~~ (e) THOMAS KRETSCHMANN and HELMUT BOTTGE,

(f) Insert Address(es) of Declarant(s).

of (f) Otto-Seeling Promenade 10-14, D-8510 Furth, Federal  
Republic of Germany  
do solemnly and sincerely declare as follows:—

(g) ~~I am/we are~~ when Applicant is a company.

1. (g) ~~I am/we are~~ the applicant(s) for the patent/~~patent of addition~~  
~~or~~

(h) Delete when Applicant is an Individual. Fill in Name of Applicant if a Company.

(h) ~~I am/we are~~ authorised by the said Company

the applicant for the patent/~~patent of addition~~ to make this declaration on its behalf.

(i) For Non-Convention Application, delete. For Convention Application, fill in details of basic application.

2. (i) ~~The basic application(s) as defined by Section 111 of the Act was/were made~~  
~~in~~ ~~on the~~ ~~day of~~ ~~19~~  
~~by~~

(j) Delete for Non-Convention Application by Assignee of Inventor and for Convention Application.

3. (j) ~~I am/we are~~ the actual inventor(s) of the invention  
~~or~~

(k) Delete for Non-Convention Application by Inventor and Convention Application Assignee.

(k) ~~I am/we are~~ the actual inventor(s) of the invention referred to in the basic application.  
~~or~~

(l) Delete for Application by Inventor. For Application by Assignee, insert name, address and occupation of Assignee.

HANS JURGEN SUFKE, of  
Osterfeldstrasse 4a,  
D-4630 Bochum 6,  
~~of~~ Federal Republic of Germany  
is/~~are~~ the actual inventor(s) of the invention and the facts upon which  
~~I am/we are~~ the said Company is entitled to make the application are as follows:

(m) Insert details of Assignment, etc. Date of Assignment only is insufficient.

(m) the said Company would, if a patent was to be  
granted upon an application made by the said  
actual inventor, be entitled to have the patent  
assigned to it.

(n) Delete for Non-Convention Application.

4. ~~The basic application referred to in paragraph 2 of this Declaration was the first~~  
~~application made in a Convention country in respect of the invention the subject of the~~  
~~application.~~

(o) Insert place and date of signature.

(o) Declared at Furth this 28th day of February, 1988

FLACHGLAS AKTIENGESELLSCHAFT

Australia

593725

PATENTS ACT 1952

Form 10

# COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

Short Title:

Int. Cl:

Application Number:  
Lodged:

Complete Specification—Lodged:  
Accepted:  
Lapsed:  
Published:

Priority:

Related Art:

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Name of Applicant: **TO BE COMPLETED BY APPLICANT**  
**FLACHGLAS AKTIENGESSELLSCHAFT**

Address of Applicant: **Otto-Seeling-Promenade 10-14, D-8510 Furth, Federal Republic of Germany**

Actual Inventor: **HANS JURGEN SUFKE**

Address for Service: **CALLINANS [REDACTED] Patent Attorneys, of  
48-50 Bridge Road, Richmond, State of Victoria, Australia.**

Complete Specification for the invention entitled: **"FACADE PANEL IN THE FORM OF A  
COMPOSITE GLASS PLATE"**

The following statement is a full description of this invention, including the best method of performing it known to me:—

\* Note: The description is to be typed in double spacing, pica type face, in an area not exceeding 250 mm in depth and 160 mm in width, on tough white paper of good quality and it is to be inserted inside this form.

The present invention relates in general to a facade panel in the form of a composite glass panel including a glass sheet on the wall side as well as a glass sheet on the outer visible side which are joined together by means of a layer of synthetic plastics material, and a device for attachment to the wall. According to a preferred embodiment, all the sheets are made of glass. It will be understood that the facade panel may be colored. In particular, it is possible for it to have an optically effective coating. An optically effective coating is, in general, a colored coating or a reflective coating. It serves the purpose of concealing the parts of the building structure which are located behind the facade panel. The layer of synthetic plastics material used for joining the glass sheet on the wall side to the outer visible sheet is, for example, a polyvinylbutyral film or a layer of casting resin.

In the case of the general type of facade panels known from actual practice, the fastening devices are profiled elements or fittings which are disposed along the edges or in a corner region of the panel. This detracts from the appearance in the assembled state, because said profiled elements or fittings are visible from the outside.

The present invention seeks to develop a general type of facade panel in such a manner that the means of fastening the panel to the building structure are not visible from the outside of the building.

To achieve this end, the present invention teaches that the glass sheet on the wall side should have at least two holes drilled through it which are provided with undercutting and that a metal fastening element should be positively anchored into the drilled holes with the aid of bushing in each case. Other fastening components can be attached to this fastening element. The invention makes use of the fact that, for a general type of facade panel, holes for the fastening elements can be drilled through the glass sheet on the wall side without detracting from the mechanical strength and stability, and stresses arising due to the weight of the panel and wind forces can be transmitted through these drilled holes when the panel is in the mounted position on the face of the building.

This applies especially if the wall side sheet through which the holes are drilled is made from a single sheet of safety glass. A form of embodiment which is distinguished by its mechanical strength and stability is characterized by the fact that the undercutting has the cross-section of a truncated cone in the manner of a countersunk hole. An aggregate consisting of two sheets, one of which has undercut holes drilled through it, into which the allocated metal fastening element is inserted, is known in its own right from the German Patent DE 732 014. In this instance the task has not been undertaken of drilling the holes directly through the glass sheet itself but, instead of this, a recess has been provided in the glass sheet for attachment, by means of an adhesive, of a sheet of synthetic plastics material through which the undercut holes have been drilled. Very surprisingly, this has not been found to be necessary for a facade panel of the general type. The colored configuration, especially with an optically effective coating, when the facade panel is mounted in position, completely conceals the holes drilled in the sheet on the wall side as well as the fastening elements which are inserted therein.

There are several possibilities for further development and configuration within the scope of the present invention. Thus it is possible to provide the glass sheet on the wall side with three fastening elements which form a well-defined static fastening aggregate. However, it is also possible to provide the glass sheet on the wall side with a fastening element in each of the corner regions of the sheet. It is recommended that the bushings for the drilled holes should be made from synthetic plastics material. They can also be castings of plastics material. Another proposal which is put forward in this connection is to work with bushings made from a comparatively soft metal, for example lead. The fastening elements are preferably in the form of screws or screw-threaded elements having a head which, along with the bushing, is seated in the undercutting of the drilled hole to be flush with the surface of the sheet facing away from the wall.

In order that the invention may be more clearly understood

and put into practical effect, reference will now be made to a preferred embodiment of a facade panel in accordance with the invention. The ensuing description is given by way of non-limitative example only and is with reference to the accompanying drawings, wherein :

Fig. 1 is a cross-section through a facade panel in accordance with the invention,

Fig. 2 is an elevation of the panel of Fig. 1, viewed in the direction of the arrow A.

The facade panel depicted in the drawing is fabricated in the form of a composite glass panel. It consists of a glass sheet 1 on the wall side and a glass sheet 2 on the outer visible side, the two sheets being joined together by a layer 3 of synthetic plastics material. The glass sheet 2 on the outer visible side of the panel is coated on the inside with a layer 4 of optically effective material in contact with the synthetic plastics material layer 3.

There are at least two holes 5 drilled through the glass sheet on the wall side of the panel and these holes are undercut, or countersunk, at position 6. Only one of these holes is shown in Fig. 1. A metal fastening element 8 is positively anchored in the drilled hole 5 with an interposed bushing 7. For such an arrangement, the glass sheet 1 on the wall side of the panel is expediently fabricated from a single sheet of safety glass. The undercutting 6 has the configuration of a truncated cone after the fashion of a countersunk hole.

The facade panel may be furnished with three drilled holes 5 of the type described, each having an associated fastening element 8, so that a well-defined static fastening aggregate is formed, or else the fastenings may be provided at each of the four corners of the panel. The bushing 7 is made from synthetic plastics material.

The fastening elements 8 are in the form of screws or screw-threaded elements having a head 9 which, along with the bushing 7, is seated in the undercut drilled hole 6 to be flush with the surface of the inside sheet of the panel.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS :

1. A facade panel in the form of a composite glass panel including a glass sheet on the wall side as well as a glass she on the outer visible side which are joined together by means of a layer of synthetic plastics material, and a fastening device, wherein the glass sheet on the wall side has at least two holes drilled through it which are provided with undercutting and wherein a metal fastening element is positively anchored into the drilled holes with the aid of a bushing in each case.
2. The panel as claimed in Claim 1, wherein at least the wall side sheet is made from a single sheet of safety glass.
3. The panel as claimed in Claim 1 or Claim 2, wherein the undercutting has the cross-section of a truncated cone in the manner of a countersunk hole.
4. The panel as claimed in any one of Claims 1 to 3, wherein the glass sheet on the wall side has three fastening elements forming a well-defined static fastening aggregate.
5. The panel as claimed in any one of Claims 1 to 3, wherein the glass sheet on the wall side has a fastening element in each of the corner regions of the sheet.
6. The panel as claimed in any one of Claims 1 to 5, wherein the bushings for the drilled holes are made from synthetic plastics material.
7. The panel as claimed in any one of Claims 1 to 6, wherein the fastening elements are in the form of screws or screw-threaded elements which possess a head which is seated in the undercutting of the drilled hole to be flush with the surface of the inside glass sheet facing away from the wall.



8. A facade panel in the form of a composite glass panel, substantially as described herein with reference to the accompanying drawings.

D A T E D this 16th day of March, 1988.

FLACHGLAS AKTIENGESELLSCHAFT  
By its Patent Attorneys:  
CALLINANS



Fig.1

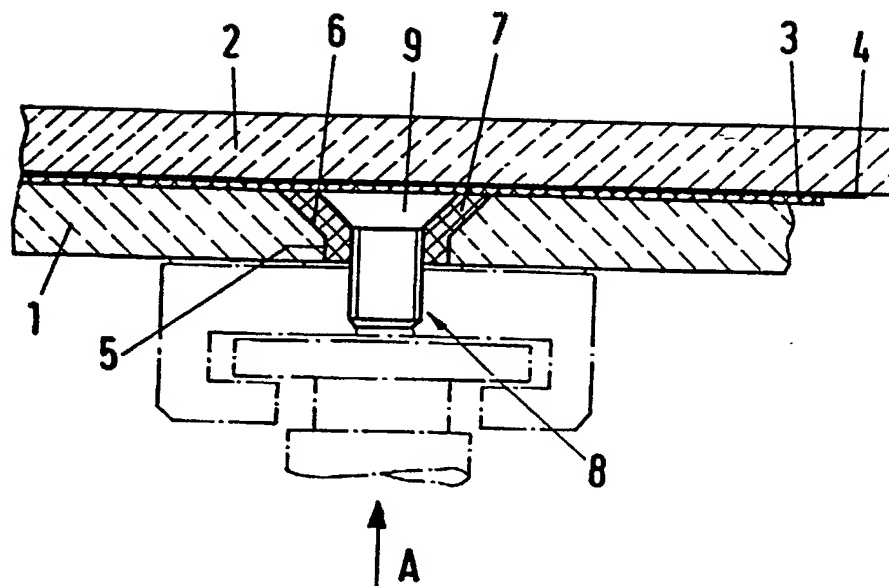
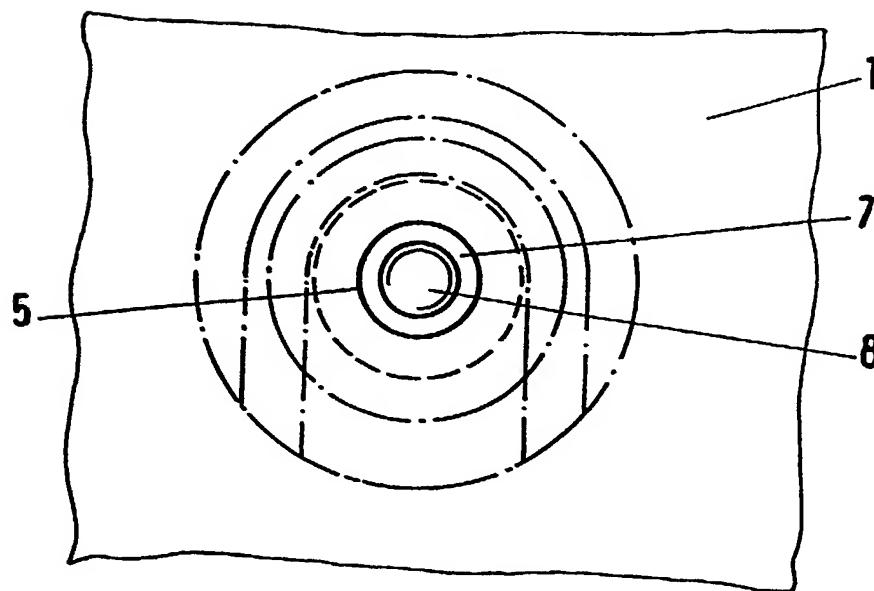


Fig.2



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